Alternative EX-4

Group
WATER SUPPLY

Title
Chain of Lakes

This alternative is centered on the construction of a chain of lakes to store water and transport it through the Delta. It is intended to achieve substantially greater protection of anadromous and resident fish from diversion effects, greater aquatic habitat productivity in the Delta, and more reliable and high quality supply of water for export. The water supply would be more reliable because it would be substantially less constrained by restrictions to protect fish from diversion effects in the Delta and because the CVP and SWP facilities could be operated with more flexibility.

Diversions would be made at times and at the locations that cause the least environmental harm and could reduce diversion volume directly from the Delta by approximately 50 %, thereby approximately doubling residence time in Delta aquatic habitats. Water would be diverted at approximately 5 locations, one or more of which would be in the North Delta on the Sacramento River. Water would be diverted on an ongoing basis for transport to the export pumps. During storm events water would be diverted onto islands for both transport to the pumps and for storage on the islands until needed. Water stored on these islands could be used for exports or for Delta outflow.

Water supply reliability would be improved due to the extra storage capacity provided by the islands, and by relocating and increasing the number of diversion locations to reduce entrainment impacts. Water quality would be improved by the relocation of the primary intake to the North Delta. Reduced Delta inflow that currently dilutes pollutants would be matched by reduction in the pollutant load entering the Delta in the San Joaquin River. Increased flood protection would be provided around the chain of lakes and on other Delta islands.

The system would be operated as follows:

- The chain of lakes would consist of a series of Delta islands linked by siphons, existing channels, or new channels constructed across islands to the CVP and SWP export pumps. The total storage capacity would be approximately 300-600K acre-feet. Combined intake capacity would equal approximately 25K cfs (5 screened intakes at 5K cfs each). One intake would be located in the North Delta, one at the Clifton Court Forebay, and the remaining at various locations on the islands.

- The multiple diversion locations would allow diversions at times and locations that cause the least environmental harm. Water would be diverted for storage onto the islands during winter storm events when there is considerable water in the Delta and when fish generally aren't migrating through the Delta. The stored water would be released during periods of high environmental sensitivity and during the spring and summer as needed either for exports or for Delta outflow. The island system might be filled and lowered several times within a given year.

- Upstream reservoirs would have increases in amount of stored water because of increased diversion opportunities and Delta storage provided by this alternative. Any increased yield could be balanced between increased environmental flows and increase in reservoir carryover storage. New, more protective, environmental standards could be set for the Delta, based upon the new flexibility:

Key Actions

Construct Isolated Transfer and Storage Facility in the Delta (Chain of Lakes)—Convert a series of islands into a storage/conveyance facilities. Screened diversion capacity between approximately 5 diversion points would total approximately 25,000 cfs and storage would total approximately 300,000 to 600,000 acre-feet.

Increase Diversion Rate Capacity—Obtain approvals for fully utilizing existing export capacity during times of lower environmental sensitivity, such as the winter months, so that diversions can be reduced during times of greater sensitivity such as late spring and early

Construct Additional Storage Connected to Export Canals—Construct or expand off stream storage connected to the export canals (e.g., enlarge Los Vaqueros Reservoir or complete East side Reservoir).

Install Barriers—Install barriers to maintain adequate water levels for in-Delta diversions.

Delta Habitat Restoration—Create shallow habitat would be created through levee setbacks or new interior levees. All levee setback programs would be coupled to riparian and shaded riverine habitat restoration on all appropriate new and old levees.

Levee Upgrades—Provide landside buffer zones of 50 to 75 yards to minimize levee subsidence for islands providing valuable existing habitat, such as on Bradford Island. Improve levee maintenance and stabilization to at least National Flood Insurance Program standards (NFIP; 100-year flood protection) for all islands, such as Tyler and Mandeville, containing existing infrastructure and/or land use that provides economic benefit to the region. Improve levee maintenance and stabilization to at least Bulletin 192-82 or PL-99 standards (generally considerably more than 100-year flood protection) for critical western Delta islands, such as Brannan-Andrus, Bethel, and Sherman, to reduce risk to critical infrastructure (e.g. Mokelumne Aqueduct, PG&E gas lines, Highway 160) and to reduce risk to export water quality from salinity intrusion due to levee failure. A levee management plan would provide necessary funding for ongoing maintenance and emergency funding and direction to reclaim Delta islands in the event of inundation in order to continue protection of Delta functions as an integrated resource system

Relocate Diversions -- Relocate export diversions to multiple locations along the new isolated transfer/storage facility. Provide multiple points of diversion, so that with real time monitoring of fish migrations, diversion locations can be selected to minimize impacts on migrating fish.

Control Predators -- Harvest predators at Delta and upstream diversions, holding areas, and other environmentally sensitive areas in the Sacramento and San Joaquin river basins.

Reclamation -- Reclaim agricultural, municipal and industrial wastewater for a variety of uses, improving water quality by reducing wastewater discharges.

Manage Drainage/Discharges -- Impose in-Delta and upstream cropping and irrigation practices to increase the effectiveness of chemical applications to reduce nonpoint source leaching volumes and concentrations. Improve drainage timing for dilution during high flow periods to reduce instream impacts. Set pollutant load limits in the San Joaquin and Sacramento Rivers. Prevent toxic discharges from industrial plants using stronger enforcement, especially during environmentally sensitive periods.

Preliminary Assessment

Ecosystem Quality -- This alternative would provide significant improvements to the ecosystem by reducing entrainment impacts on fish and fish food. Entrainment impacts would be reduced by the relocation of the principal diversion to the North Delta, the use of real-time monitoring and multiple intake locations to minimize entrainment impacts, and the screening of all new diversions. It would also have system benefits by increasing the residence time of water in the Delta, boosting estuary productivity.

Water Supply -- This alternative would provide significant improvements for water supplies. Greater flexibility in location of diversions, greater instantaneous diversion capacity, short term storage (Delta islands), longer term storage (off stream storage), and access to Sacramento supplies with reduced pumping restrictions should allow for significant improvements in export supplies.

Water Quality -- This alternative improves export water quality through relocating export diversions upstream of the Delta, and by providing additional storage. Water quality in the south Delta would be improved by reducing pollutant loads in the San Joaquin River.

System Vulnerability --Constructing an isolated conveyance facility essentially eliminates the risk that water supply exports will be interrupted by a failure of in-Delta facilities. Improvement of levees around Delta islands protects land use, infrastructure, and habitat on those islands.